Post-reperfusion time (min)	0	2	5	10
Quinaprilat group	100 ± 14	103 ± 11	106 ± 9	106 ± 10
Control group	77 ± 12***	87 ± 9***	106 ± 10	111 ± 5

*P < 0.05, **P < 0.01, ***P < 0.001 vs quinaprilat group

As shown, ERP changes in the quinaprilat group during myocardial ischemia and following reperfusion was significantly smaller than those of the control group. The incidence of Vf in the quinaprilat group [3/14 (21%)] was significantly smaller than that in the control group [14/19 (74%), P < 0.01] during myocardial ischemia and following reperfusion.

Conclusion: Quinaprilat protects against the electrophysiologic deterioration, and may decrease the fatal arrhythmia during acute myocardial ischemia and following reperfusion.

1098-176 Conduction Time Alternans and Wave Break: Dynamic Precursors of Ventricular Fibrillation Induced by Rapid Pacing

J.-M. Cao, Y.-H. Kim, T.-J. Wu, C. Kim, A. Garfinkel, J.N. Weiss, H.S. Karagueuzian, P.-S. Chen. *Cedars-Sinai Medical Center and UCLA School of Medicine, Los Angeles, California, USA*

Background: According to multiple wavelet hypothesis, breaking up of large wavefronts (WFs) into smaller daughter wavelets is essential in maintaining ventricular fibrillation (VF). The dynamic precursors underlying wave break is unclear.

Methods: The epicardium of the right ventricular (RV) outflow tract was mapped with 477-bipolar electrode plaque (3.2 × 3.4 cm) in 9 open-chest dogs. The RV was paced (point source, unipolar cathodal 3x threshold) from the center or either side of the plaque at progressively shorter cycle lengths (CL, 10 ms decrement) until VF was induced.

Results: Activation WFs induced during CL 300 ms propagated in an elliptic pattern with constant conduction time (CT) on a beat-to-beat basis in all direction. As the CL decreased (~220 ms), successive WFs showed alternans in CT (15 to 30 ms) across but not along the long axis of the fibers. At the CL that VF was induced (166 ± 22 ms) the alternans in CT of paced beats prior to VF increased in magnitude (40 to 60 ms) leading to local conduction block and wave break. Block occurred across the fiber but not along the fiber.

Conclusion: The transition from regular periodic (paced beats) to VF is preceded by CT alternans that becomes larger at faster rates. CT alternans leads to local conduction block and wave break and subsequent initiation of VF. CT alternans may be a precursor of VF in in-situ hearts.

1098-177 Simple Measurement of JTU-Area on the ECG Indicates Changes in Interventricular Dispersion of Repolarisation in Dogs

J. van Opstal, C. Verduyn, M.A. Vos, H. Leersen, J.D. Leunissen, H.J.J. Wellens. *Cardiology, Maastricht, The Netherlands*

Heterogeneity in cardiac repolarisation (e.g. QT-dispersion) is known to be arrhythmogenic. In our dog model of chronic complete AV-block we have demonstrated repolarisation disturbances (TU-waves) in association with an increased interventricular dispersion (ΔAPD) calculated as Left Ventricular (LV) Action Potential Duration (APD) minus Right Ventricular APD. Whether ΔAPD can be visualized on the ECG is uncertain. Therefore we determined the relation between ΔAPD, QT-time and JTU-area (I_J^{80}, mV*ms) in lead II in 3 protocols which affect the above named parameters differently: 1) class III drugs (cl III) followed by levcromakalim (L, n = 7), 2) LAD coronary occlusion (isch) and reperfusion (n = 6) and 3) dronedarone (dron, n = 4) an amiodarone like agent.

Results: Cl III caused an increase in ΔAPD (table, *p < 0.05) by lengthening LV APD and QT time. This was reflected by an increase in JTU-area which was correlated to ΔAPD (r = 0.67, p < 0.01). Isch caused an increase in ΔAPD by a reduction in LV APD. JTU-area was increased while there was no effect on QT time. L as well as repertusion reversed these effects. Dron showed no effect on ΔAPD nor on JTU-area, while QT time decreased.

	Control	ΔAPD (ms)	Control	JTU-area	Control	QTime (ms)
cl III	55 ± 40	120 ± 50*	50 ± 40	95 ± 35*	395 ± 25	530 ± 60*
isch	30 ± 25	-90 ± 40*	60 ± 55	75 ± 50*	380 ± 50	370 ± 50*
dron	40 ± 25	45 ± 30	55 ± 30	55 ± 30	405 ± 50	365 ± 50*

Conclusion: Heterogeneity of repolarisation as evidenced by ΔAPD is reflected by changes in JTU-area which seems not to be associated with changes in QT-time. This non-invasive parameter may therefore be used as a simple parameter to point out heterogeneity in repolarisation.

1098-178 Heart Rate Variability and Dispersion of Refractoriness Increase During Recovery From Electrical Remodeling in the Goat

Y. Blaauw, R.G. Tieleman, J. Brouwer, M.P. van den Berg, P.J. de Kam, J. Haaksma, C.D.J. de Langen, H.J.G.M. Crijns. *University Hospital Groningen, The Netherlands*

Background: Atrial tachycardia shortens the atrial effective refractory period (AERP), and increases induction (IND) and duration (DUR) of atrial fibrillation (AF). To determine the role of the autonomic nervous system during this so-called electrical remodeling we analyzed heart rate variability (HRV) in chronically instrumented goats.

Methods: In 18 experiments in 11 goats we measured the AERP at 430 ms and HRV before (t = 0) and after 24 hours (t = 24) of rapid atrial pacing (300 bpm) and 24 hours after cessation of pacing (t = 48). Dispersion of refractoriness (DOR) was defined as the max-min AERP. HRV was determined using time and frequency domain analysis of 500 AA intervals during sinus rhythm.

Results: After 24 hours of rapid atrial pacing the AERP shortened significantly, with an increase in IND and DUR, but with no changes in HRV and DOR. After cessation of pacing the AERP prolonged. DOR and HRV increased, indicating an increase in vagal tone. The IND of AF decreased significantly, while the DUR did not.

Conclusions: An increase in vagal tone might be responsible for the increased dispersion of refractoriness and duration of AF, during recovery from electrical remodeling after atrial tachycardia.

	0	24	48
AERP (ms)	148 ± 20	103 ± 23*	137 ± 29†¶
DOR (ms)	54 ± 24	48 ± 30	64 ± 25†¶
IND %	38 ± 32	69 ± 24*	46 ± 37¶
Ln DUR	0.4 ± 0.2	0.9 ± 0.2*	0.6 ± 0.2
AVGNN (ms)	583 ± 89	535 ± 68	642 ± 142†¶
Ln rMSSD	2.0 ± 0.3	1.7 ± 0.3	2.4 ± 0.3¶
Ln HF	3.0 ± 0.6	2.4 ± 0.6	3.8 ± 0.6¶
Ln LF	4.7 ± 0.5	4.4 ± 0.4	5.1 ± 0.5

*p < 0.01 0–24, †p < 0.01 24–48, ‡p < 0.01 0–48

1099 Catheter Ablation of Supraventricular Arrhythmias

Tuesday, March 31, 1998, 9:00 a.m.–11:00 a.m.
Georgia World Congress Center, West Exhibit Hall Level
Presentation Hour: 10:00 a.m.–11:00 a.m.

1099-161 Quantifying Clinical Outcomes of Ablate and Pace Therapy for Atrial Fibrillation: Insights From Metaanalysis

K.A. Ellenbogen, M.A. Wood, G.N. Kay, C.B. Mahoney. *Medical College of Virginia, Richmond, VA, University of Alabama, Birmingham, AL, USA*

Patients (pt) with atrial fibrillation (AF) may remain symptomatic from inadequate rate control. While uncontrolled studies suggest symptomatic improvement after AV junction ablation/pacing results from controlled randomized studies are not available. To further assess the outcome of pt undergoing RFA/pacing we performed meta-analysis of 18 outcome variables in 931 pt reported in 12 studies.

Results:

Outcome Measure	Pre-RFA	Effect size	P value
Treadmill time (seconds)	491 ± 14	+80 ± 14	< 0.001
Frequency of AF symptoms (0–1)	0.79 ± 0.002	-0.39 ± 0.02	< 0.001
Exercise Tolerance (0–1)	0.66 ± 0.03	0.34 ± 0.04	< 0.001
Ejection Fraction	0.31 ± 0.01	+.11 ± 0.3	< 0.001
NYHA Class	3.0 ± 0.1	0.98 ± 0.4	< 0.001
Hospital/ER visits/year	3.0 ± 0.2	2.6 ± 0.2	< 0.001

Summary: In controlled studies RFA of the AV junction is associated with significant improvements in quality of life, exercise tolerance, NYHA heart failure symptoms, and left ventricular systolic function. Patients undergoing RFA of the AV junction have fewer hospital admissions/emergency room (ER) visits.

TUESDAY POSTER